GHENT UNIVERSITY

Course Specifications

Valid in the academic year 2023-2024

Ship Behaviour in Shallow and Confined Water (E055320)

Course size *(nominal values; actual values may depend on programme)*

Credits 3.0 **Study time 90 h**

Course offerings and teaching methods in academic year 2023-2024

A (semester 2)	English	Gent	lecture
			excursion

Lecturers in academic year 2023-2024

Delefortrie, Guillaume	TW15	lecturer-in-charge
Lataire, Evert	TW15	co-lecturer

Offered in the following programmes in 2023-2024	crdts	offering
Master of Science in Electromechanical Engineering(main subject Control Engineering and Automation)	3	A
Master of Science in Electromechanical Engineering(main subject Electrical Power Engineering)	3	A
Master of Science in Electromechanical Engineering(main subject Maritime Engineering)	3	A
Master of Science in Electromechanical Engineering(main subject Mechanical Construction)	3	A
Master of Science in Electromechanical Engineering(main subject Mechanical Energy Engineering)	3	A
Master of Science in Civil Engineering	3	A

Teaching languages

English

Keywords

Shipping traffic, ship hydrodynamics, shallow water, confined waters, ports, access channels

Position of the course

Acquire theoretical insight into the behaviour of ships in shallow and confined waters such as access channels, canals and harbours, and introduction to common methods for treating related problems.

Contents

- Introduction: Importance of safety and efficiency of shipping traffic in access channels and harbours
- Effect of water depth and blockage on ship resistance and propulsion
- Vertical motions of ships in channels and canals: Squat, Response to waves
- Steering and manoeuvring in ports and access channels: Effect of water depth and under keel clearance on manoeuvring and steering behaviour, Effect of mud layers on ship behaviour, Ship-bank interaction, Lock manoeuvres, Ship-ship interaction, Tug assistance, Manoeuvring simulation
- Moored ships: Mooring lines, fenders, Forces on moored ships, Motions of moored ships
- Channels and fairways: design and access policy: Concept versus detailed design, Deterministic versus probabilistic design, Tidal windows, Nautical bottom approach

Initial competences

Mathematics and physics courses from the bachelor's (required); This course builds on some learning outcomes of the course "Introduction to maritime technology" (if this course was not followed, the learning outcomes should be achieved by self-

study).

Final competences

1 Acquire thorough understanding of phenomena dominating a ship's behaviour in shallow and confined waters (e.g. access channels, canals, harbours) and of common methods appropriate to assess these effects.
2 Perform a concept design for the vertical and horizontal dimensions of a navigation channel by means of common design methods.

Conditions for credit contract

Access to this course unit via a credit contract is determined after successful competences assessment

Conditions for exam contract

This course unit cannot be taken via an exam contract

Teaching methods

Excursion, Lecture

Learning materials and price

Course notes in English, estimated cost 30 EUR, to be acquired at VTK

References

www.shallowwater.be

Course content-related study coaching

Lecturers are available before/after lessons and on request.

Assessment moments

end-of-term and continuous assessment

Examination methods in case of periodic assessment during the first examination period

Oral assessment open-book

Examination methods in case of periodic assessment during the second examination period

Oral assessment open-book

Examination methods in case of permanent assessment

Assignment

Possibilities of retake in case of permanent assessment

examination during the second examination period is possible in modified form

Extra information on the examination methods

During examination period: oral open-book exam, written preparation. During semester: graded project reports.

Calculation of the examination mark

Project report: 40%
Excursion: 10% report DFDS trip
Oral open book exam: defense of the project report: 50%
The student can only pass for the entire course if:
- for each of the above mentioned items a mark of at least 5 on 20 is obtained
- for two of the above mentioned items a mark of at least 10 on 20 is obtained

If the above conditions are not met the final mark is the minimum of 9/20 and the above mentioned weighted result.